

**FACT SHEET AND STATEMENT OF BASIS  
FOR TENTATIVE DECISION ON PERMIT ACTION**

Permit Type: National Pollutant Discharge Elimination System (NPDES)

Permittee: Olympia Oyster Company  
Southeast 1042 Bloomfield Road  
Shelton, WA 98584

Permitting Authority: Department of Ecology  
Southwest Regional Office  
P.O. Box 47775  
Olympia, WA 98504-7775

Permit Writer: Norman K. Schenck, P.E.

The above-named permittee was issued NPDES Permit No. WA-003713-3 in December 1978 for the discharge of pollutants to Oyster Bay of Totten Inlet (Puget Sound) from the hand-shucking of oysters and clams for commercial purposes. At this time, the permitting authority has made a tentative decision to reissue the permit.

The purpose of this fact sheet is to present the facts on the basis of which the tentative decision was made. The fact sheet is intended to accompany the tentative decision.

Interested persons are invited to comment in writing on this tentative decision. Written comments on the draft permit will be received for 30 days following the day of publication of the notice in the local newspaper, *The Shelton-Mason County Herald*.

All written comments submitted during the comment period will be retained by the permitting authority and considered in making the final decision on the application for a permit. The permitting authority will provide copies of the application, the tentative decision, and the fact sheet on request. Persons who submit written comments will be notified of the final decision.

The applicant or anyone affected by or interested in the tentative decision may request a public hearing. The request must be filed within the 30-day comment period, and must indicate the interest of the party filing such a request and the reasons why a hearing is warranted. The permitting authority will hold a public hearing if it determines there is sufficient public interest.

Please submit written comments to the permitting authority at the above address, to the attention of Industrial Discharge Permit Coordinator.

## **Permit History**

State and federal laws require National Pollutant Discharge Elimination System (NPDES) permits for the discharge of pollutants to surface waters from point sources. Olympia Oyster Company was issued NPDES Permit No. WA-003713-3, effective for five years beginning December 14, 1978, for the discharge of wastewater from the hand-shucking of oysters and clams. The permit's expire date was December 14, 1983, but a letter signed by an assistant director of the department, dated July 27, 1983, in response to a request for permit renewal on the part of the permittee, stated that, "...your permit and the terms and conditions thereof remain in effect until further notice." This was based on a solicited declaration from the permittee that there had been no change in the discharge (and some erroneous notion by the department that the permit term could be extended beyond five years). No action has been taken on the expired permit since. Permit fees however have been assessed, paid, and accepted from that time to the present.

This permit places limits on flow rate, total suspended solids, oil & grease, and pH. A previous "state waste discharge" permit allowed no discharge of oyster shucking process water; provisions for ultimate on-site subsurface disposal were imposed. A fragment of wording related to that remains in the latest issued permit and is confusing. Storm water is not mentioned in the permit and there is no separate storm water coverage. (There is opportunity for stormwater contact with shucked oyster shells piled on the shore.)

Though the permit has discharge limits, no self-monitoring is required to assess compliance and there is no record that the permitting authority has previously monitored the discharge for compliance.

The technology-based, categorical limits on TSS and oil & grease in the current permit are not tied to actual production but to some maximum theoretical production figure, which is far greater than actual production according to the permittee's figures.

## **Nature of the Activity Producing the Discharge**

Olympia Oyster Company has been in the business of culturing, harvesting, and shucking oysters, once primarily the native "Olympia oyster" and now primarily the exotic Pacific oyster, since the company was incorporated in 1878, before Washington was a state. In the beginning, the small native oysters were shipped to the markets of San Francisco where the taste for them remained after the local supply was depleted. Their natural range extends from there to Alaska, with South Puget Sound being at the heart of it. But the abundant populations in Oyster Bay dropped off gradually following the development in 1927 of a large pulp mill on Oakland Bay, ten miles north, at Shelton. (The oysters reportedly disappeared almost overnight in Oakland Bay, putting oyster growers and a state-operated oyster seed facility located there suddenly out of business.) But pulp was more important than oysters. The mill shut down in 1957, but the Oyster Bay population continued to decline and by 1965 diminished to almost none. In recent years, presumably after natural flushing and assimilation of the residual effects of the pulp mill discharges, the population has gradually increased to the point that in 1994 Olympia oysters were again being commercially harvested in Oyster Bay. Last year, for the first time since the construction of the pulp mill, natural native oyster setting was observed in Oakland Bay. Olympia Oyster Company has all along taken measures, physical, legal and political, to correct and improve the environment of Oyster Bay for the propagation of this native species and these efforts are still on going.

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At this time however, the predominant shellfish cultured and harvested by the Olympia Oyster Company is the Pacific oyster. (These larger, hardier Japanese oysters were introduced to try to combat the degrading environment and maintain an oyster business.) The maximum production rate in the past year was 300 gallons (2500 lb.) of oyster meat per day. Average production over the year was 133 gallons (1100 lb.) per day. (Olympia oyster production is still negligible by comparison: around 15 gallons per week.)

Pacific oyster seeding and culture is another activity engaged in at this site, but this is not a “concentrated aquatic animal production facilities,” by EPA regulatory definition, and there is no requirement for a NPDES discharge permit for these activities. The company also harvests clams but they are not shucked; they are shipped whole.

**Pollutant Discharge Potential and Controls/Potential Impacts of the Discharge**

The shucking and cleaning of the harvested shellfish, along with washdown and sanitation measures, introduces some pollutants to surface waters of the state in a discrete, point-source wastewater discharge stream. These include dissolved and suspended organic material from processing the shellfish and residual detergent and chlorine from the sanitation and disinfection measures required by the Food and Drug Administration. (The current NPDES permit has placed limits on flow rate, but this is not a pollutant and there is no other basis for this limitation.)

A treatment system for process wastewater consists of a shallow sedimentation box (with an overflow rate of approximately 300 gpd/ft at the average daily flow rate) followed by a small basket screen with 40-mesh fabric. Observation indicates that the screen blinds quickly and is impractical to maintain as an effective or reliable treatment measure. There is no assurance against bypass or overflow of the screen when it clogs. There is no way of assessing the treatment performance capability, since the permit has required no monitoring at all. Cleanup wastewater generated at the end of a processing day is conveyed through a separate floor drainage system which receives no treatment prior to discharge. The categorical effluent guidelines for this industry, the intended basis for the current permit limits, apparently are based on no treatment at all, however, and are presumably achievable through source control “best management practices” only.

The results of analysis of one composite sample taken over the course of one typical production day are shown in the following table:

**DISCHARGE DATA, OLYMPIA OYSTER CO., OCTOBER 22, 1996**

<b>ANALYTE</b>	<b>RESULT</b>	<b>UNITS</b>
Biochemical Oxygen Demand	800	mg/L
Total Suspended Solids	271	mg/L
Chlorine	0.2	mg/L
Fecal Coliform	1.8	mg/L
Oil and Grease	16	mg/L
Ammonia (NH <sub>3</sub> )	1.179	mg/L
Nitrite-Nitrate	0.542	mg/L
Total Kjeldahl Nitrogen	116	mg/L

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On the basis of this representative sampling performed by the permitting authority, the discharge is well within compliance with the applicable categorical effluent limits. The maximum applicable categorical effluent limit for suspended solids discharge for any one day is 47 lb./1000 lb product. Production on the day of sampling was approximately 1350 lb. The categorical limit is then  $1.35 \times 47 = 63$  lb. The actual discharge of suspended solids was 8 lb, as calculated by multiplying the concentration of the composite sample from that day times the maximum estimated flow (1200 gallons). Similarly, the production-based limit for Oil & Grease on that day was  $1.35 \times 2.4 \text{ lb}/1000 \text{ lb}$ . The actual discharge of Oil & Grease was  $(16)(1200)(8.33)/1,000,000 = 0.2 \text{ lb}$ .

### **The Receiving Water**

Totten Inlet at the point of discharge is specifically designated as a “Class AA (extraordinary)” marine water body for the purposes of the application of state water quality standards. These standards are intended to “markedly and uniformly exceed the requirements for all or substantially all characteristic and designated uses” of these water bodies. Characteristic and designated uses for Class AA waters include: water supply (domestic, industrial, agricultural), stock watering, fish migration, fish and shellfish rearing, spawning and harvesting, wildlife habitat, primary contact recreation, sport fishing, boating and aesthetic enjoyment, commerce and navigation.

### **NPDES Permit Requirements Applicable to this Discharge**

In general, the Clean Water Act makes the discharge of any pollutant unlawful (Section 301a). EPA or a delegated state permitting authority may issue a permit to discharge pollutants (Section 402) upon condition that the discharge meets certain requirements. The permit must assure that the discharge meets any applicable and appropriate technology-based requirements (these can be numerical limitations, specified technology applications or “best management practices”) and that it does not in any case cause or contribute to violations of the applicable receiving water standards.

The permitting authority has determined that this is a discharge of pollutants subject to NPDES permitting requirements. Categorical technology-based limits are applicable. (These limits are apparently achievable without any treatment control, according to information in the effluent guidelines development document.)

No water quality based limits are imposed on the discharge stream. The discharge (based on the sample analysis above) has the potential to cause or contribute to exceedence of water quality criteria for dissolved oxygen, chlorine, and turbidity. A “mixing” zone of allowable exceedence of the criteria up to 200 feet in diameter is allottable. To accurately assess whether or not these criteria would ever be exceeded at any point beyond this distance from this non-submerged, near-bank discharge in a shallow, tidally active zone is a daunting task no matter what method might be used (mathematical modeling, analogous modeling, or actual field measurement). This is especially so for dissolved oxygen (which is probably the most significant potential impact of this discharge. It is useful perhaps to get a sense of the potential oxygen impacts by considering simplifying assumptions and extreme conditions.

The strictest oxygen criterion for this receiving water is that the dissolved oxygen may not be depressed by more than 0.2 mg/L by “human activities.” In the case of dissolved oxygen, the discharge has a measured 5-day biochemical oxygen demand of 800 mg/L. But the 5-day BOD is just a relative measure of oxygen demand and demand rate as determined under specific laboratory conditions; the actual demand and rate will depend on the situation. If we make the conservative assumption that the water

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within the zone of allowable exceedence will change twice daily (with tidal flux), within the zone the relevant BOD is the 1/2-day BOD which could be approximately estimated to be 20 percent of the 5-day BOD. Furthermore, the lab-measured BOD reflects a temperature of 20° C, whereas the receiving water temperature is 10 degrees cooler. Since biochemical reaction rates decrease by 50 percent for each 10 degrees, the actual BOD could be further diminished by 1/2. The BOD within the zone would be thus reduced to  $800(.2)(.5) = 80$  mg/L. For each liter (or gallon) of discharge, approximately  $80/0.2 = 400$  liters (or gallons) of receiving water would have to mix with it to meet the criterion. The maximum discharge is 5000 gallons per day (over a less-than 12-hour period), so mixing with  $400 \times 5000 = 2,000,000$  gallons is needed. The amount of receiving water available within the allottable mixing zone at an average depth of four feet is  $\pi (200)^2(4)(8.33)/2 = 2,100,000$  gallons.

This oversimplified assessment shows sufficient dilution (barely). The assessment is conservative in that it does not consider reaeration or receiving water flux through the mixing zone between tidal flushes but, on the other hand, it assumes that the discharge mixes with all the available water within the zone before leaving the zone which may be far from the reality. Also, the assessment does not account for the actual long-term exertion of the oxygen demand after it leaves the mixing zone and the resulting far-field (and far-time) impacts. It is reasonably assumed that reaeration and dispersion rates in the far-field will exceed the rate of depletion due to BOD.

It should also be considered that the very stringent oxygen depletion criterion (0.2 mg/L) is not toxicity-based, but arbitrary, making the imposed application of it to the chronic toxicity mixing zone rationally weak. This criterion was carried over from previous versions of the water quality standards in which it applied apparently to the whole receiving water body. (If this was the original intent of the criterion, the current application of it would seem extremely, and perhaps unreasonably, conservative.) While the results of this rough assessment indicate that a more rigorous assessment would be desirable to more definitively determine the potential for exceeding water quality criteria, there is no reliable method. And given the conservative assumptions and the stringent criterion, as discussed, the assessment as made is deemed adequate to predict no interference with the characteristic uses of the receiving water due to dissolved oxygen depletion.

Chlorine fate is also impractical to model accurately because it is reactive. A reduction of 0.2 mg/L (the discharge concentration)/.0075 mg/L (the chronic aquatic toxicity criterion) = 27 times is required within the mixing zone. The available dilution, alone, is  $2,100,000/5000 = 420$  times (assuming complete mixing).

Turbidity (caused by the suspended solids in the discharge) is also impractical to model. Visual observation on the day of sampling demonstrated that visually distinguishable turbidity dissipated within a few feet of the discharge point.

Monitoring the wastestream flow, suspended solids, oil & grease, and pH is required to assess compliance with permit limits. (Flow monitoring is necessary in order to calculate mass discharge of the limited pollutants.)

Flow of water (limited in the current permit) is not a pollutant and therefore need not be limited.

There is no need to issue a permit to preclude or control the discharge of sanitary waste as the current permit does. That is implicit in the law and in the absence of a permit to discharge such wastes.

### **Tentative Decision**

In respect of the above considerations, the permitting authority has made a tentative decision to issue a NPDES permit. A copy of the permit accompanies this fact sheet.

### **Basis for Effluent Limitations in the Permit**

*Total Suspended Solids, Oil & Grease, pH.*

The limits placed in the permit on these parameters are based on the categorical effluent limitations guidelines representing the degree of effluent reduction attainable by the application of the best practicable control technology currently available for the Pacific Coast hand-shucked oyster category (40 CFR Part 408, Subpart Y).

### **Basis for Monitoring Requirements in the Permit**

The monitoring points, frequencies and methods prescribed in the testing schedule are as deemed needed to provide representative monitoring to establish compliance with permit limits (regulatory basis: 40 CFR 122.41(j) and 122.48 (b)).

### **Basis for Other Special Conditions in the Permit**

*Special Condition S2. Monitoring, Recording and Reporting Requirements:*

The obligation for the permitting authority to impose these requirements in permits is stipulated in 40 CFR 122.41, “conditions applicable to all permits.”

### **Basis for Standard Conditions in the Permit**

The general conditions include standard conditions which are applicable to all NPDES permits per the Code of Federal Regulations (CFR). These permit requirements are, for the most part, contained in 40 CFR 122.41. Others stem from paragraphs 122.21, 122.22, 122.42, 122.43, 122.44, 122.62, 122.63 and 122.64. Some of the general conditions are based on the Washington Administrative Code, Chapter 173-220.